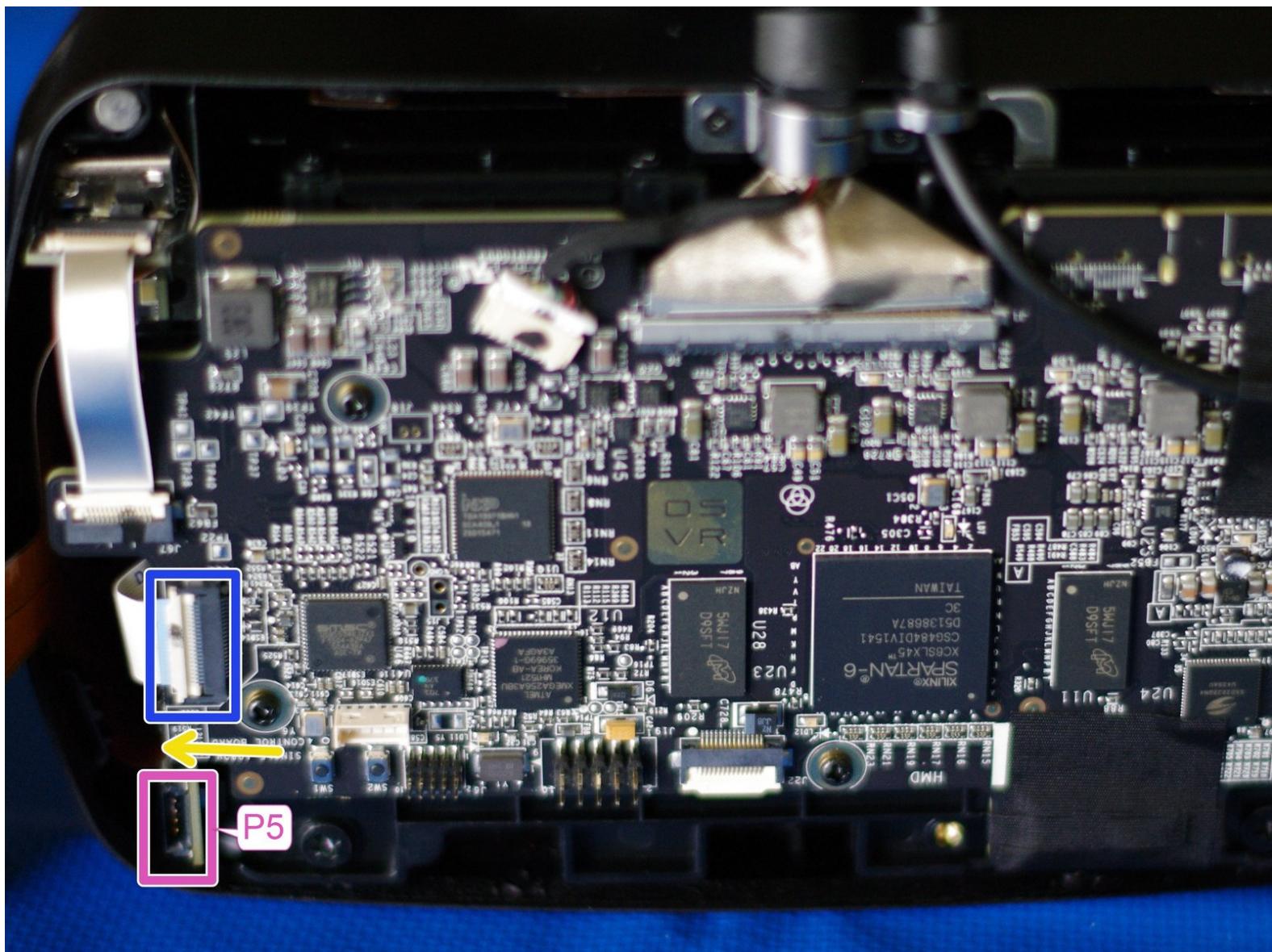




Razer OSVR HDK 1.4/2.x - P5 Firmware Update

How to use STVP to flash the IR Board using the P5 connector and a ERNI Cable.

Written By: Sebastien Plante



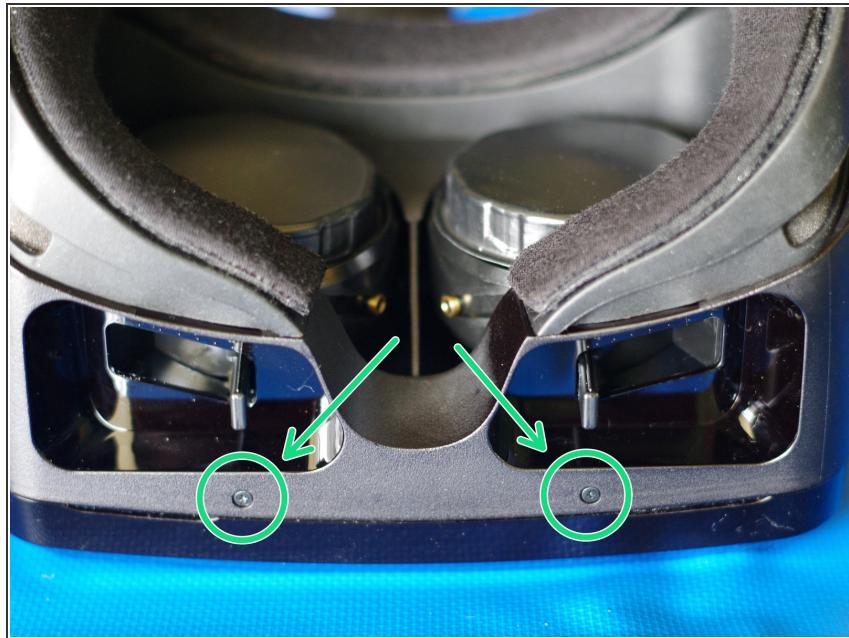
 **TOOLS:**

- [Phillips #00 Screwdriver \(1\)](#)

 **PARTS:**

- [STVP-STM32 \(1\)](#)
- [ST-LINK/V2 Programmer \(1\)](#)
- [ST-LINK V2 Programmer Drivers \(1\)](#)

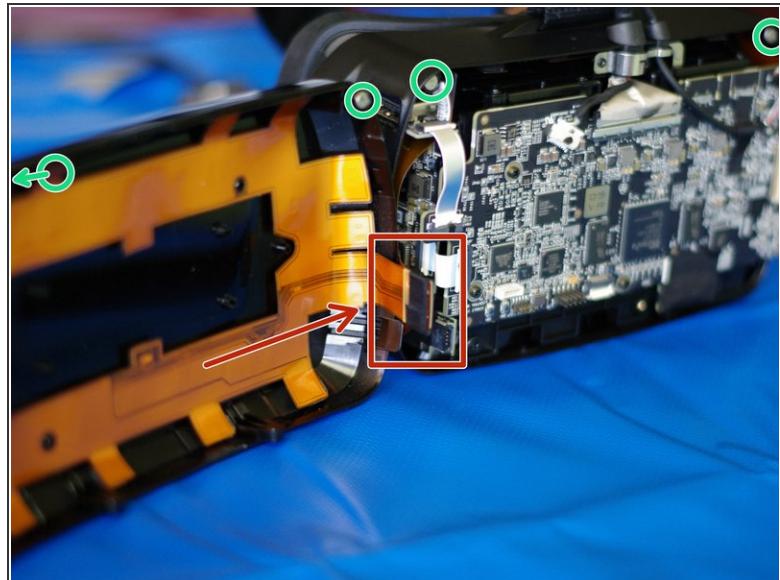
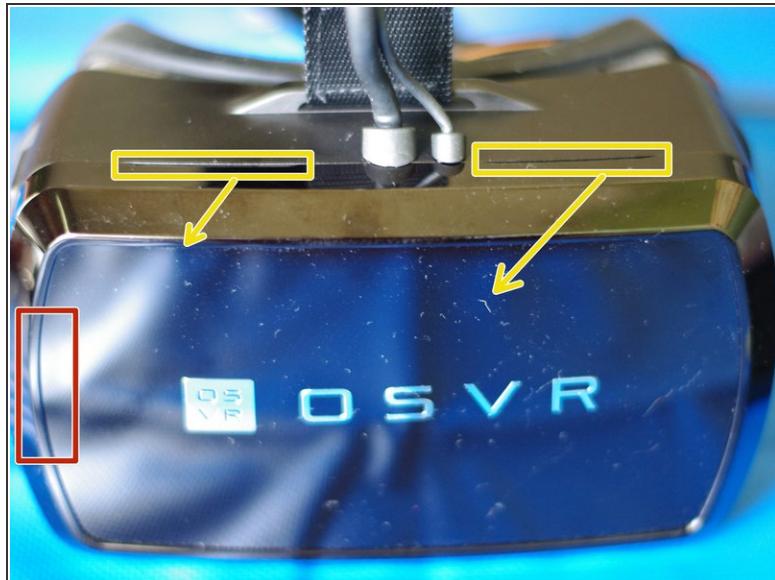
Step 1 — Removing faceplate screws



- Lay HDK headset face down on a soft surface. Remove the two Phillips #00 screws from the bottom.

! If the screws do not easily unscrew, you may need to try a different screwdriver. They are quite small and precise, and in the 1.3 and later at least, seem to be a Phillips #00 (possibly just a #0 in 1.2), but if your screwdriver set is not exact, they are easy to strip. **If the screws don't turn, try another screwdriver.**

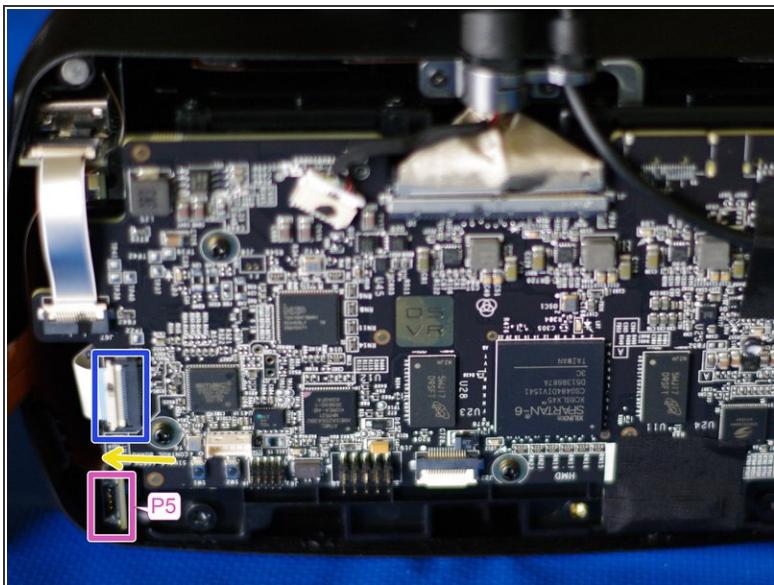
Step 2 — Opening faceplate



- Turn the headset upright.

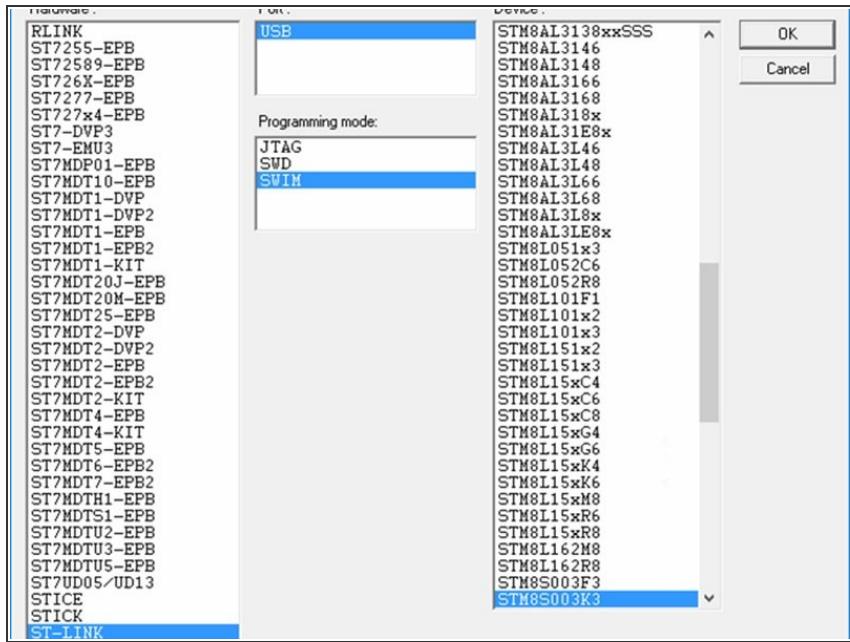
- Behind the red box is a connector between a ribbon cable attached to the faceplate and a ribbon cable wrapped inside the body of the HMD. It's taped together in addition to the force of the connection, but is still somewhat fragile, so **when opening, this left side should be treated as the "hinge"**.
 - There are now only two pairs of magnets at the top in the corners holding the faceplate to the body of the HMD. (In the inside image, one of the faceplate magnets is not pictured.)
 - There are two grooves on top, marked, to use in faceplate removal. Keeping in mind the minimal force holding the faceplate on, and the location of the faceplate connector, gently pull/fold the faceplate out and to the left. **Do not use any tools for this step!**
- i** Images show an OSVR HDK 1.4, HDK 1.2 and 1.3 internally look extremely similar. The main circuit board on the HDK 2 differs, but the basic opening procedure and tracking cables should be the same. The faceplate connector cable for the HDK 2 is different, less fragile, and does allow for easy disconnection/reconnection if desired.
- !** **Avoid placing strain on the (1.x) connector highlighted in red: do not let the faceplate dangle from it or pull on it.** If it disconnects internally, you will notice the IR tracking LEDs not lighting up. As long as the connector has not torn off, you can align and squeeze it gently to re-seat the connection and fix it; you'll feel it click.

Step 3 — Connecting the STLink to the HDK



- Install the STLink/V2 Drivers
- Install the ST Tools Set (Including STVP)
- Locate the P5 4 PIN Connector on the Lower Left of the HDK.
⚠ If it's not there, you will have to refer to this procedure : [How to add a IR board programming connector to OSVR HDK 1.2 1.3 1.4 2](#)
- Connect the "ERNI" Connector (black part) to the P5 connector and connect the other end to the STLink/V2
- Connect the STLink/V2 USB Cable to the HDM side USB.
 ⓘ You can also connect it directly to the computer if you want.
- Connect the HDM to the BeltBox and connect the USB and Power Adapter to the belt box.

Step 4 — Configuring STVP



- Open ST Visual Programmer (STVP)
- Select ST-LINK as the HARDWARE
- Select SWIM as the Programming Mode
- Select STM8S003K3 as the Device

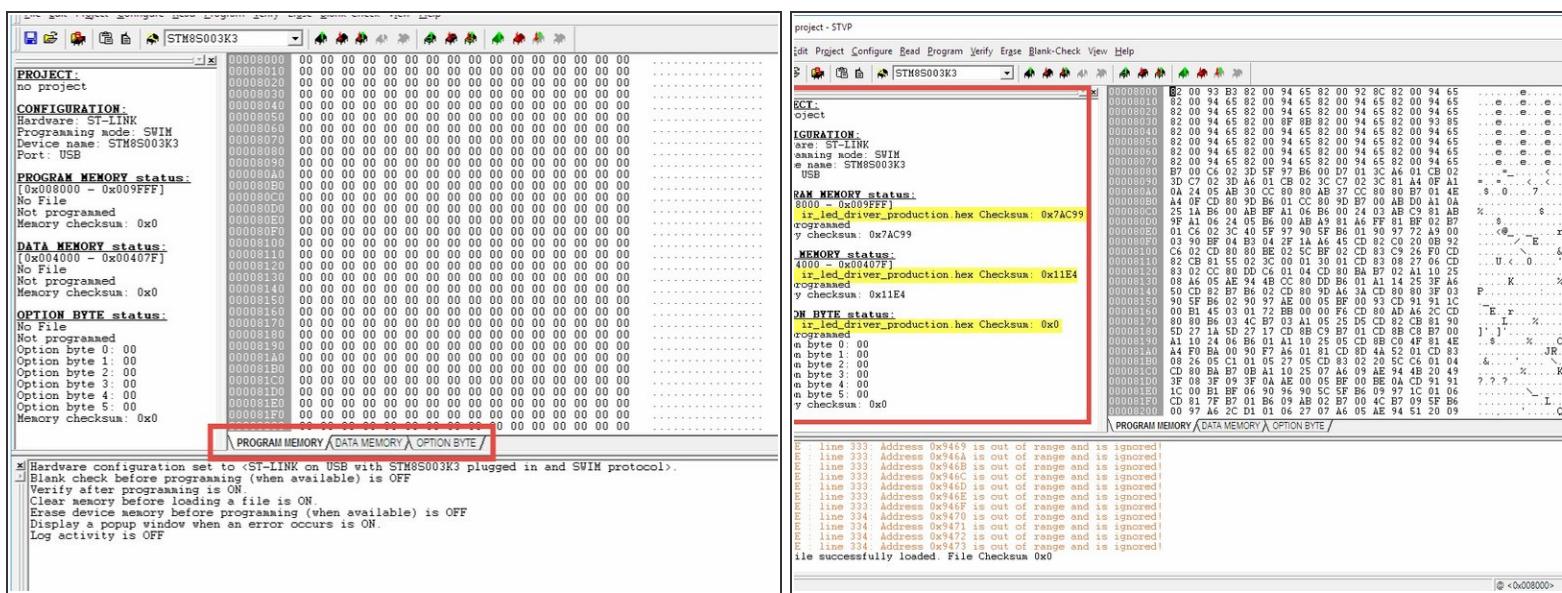
Step 5 — Backup the Actual Firmware



! Optional, but recommended.

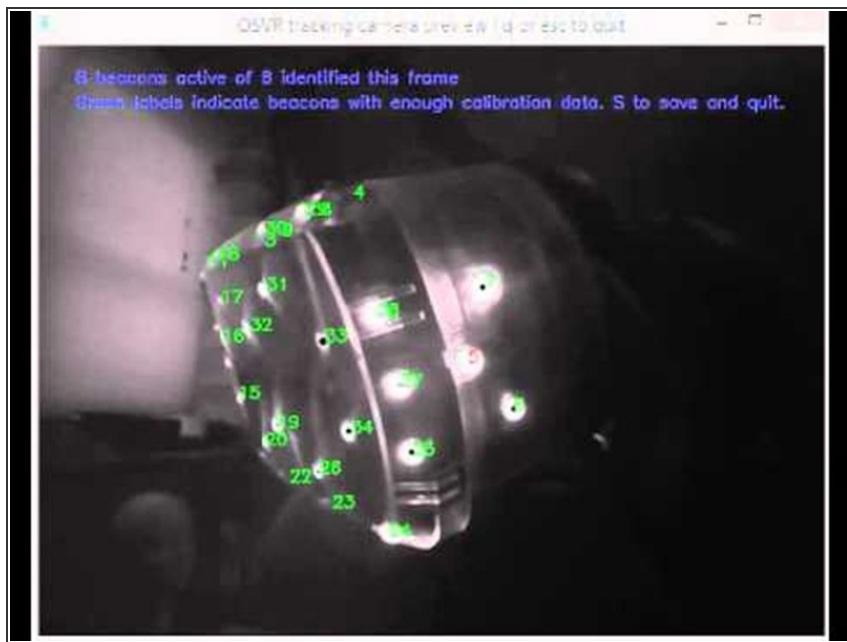
- Do "READ > All Tabs"
- Click "Save As" and save the .hex file somewhere :)

Step 6 — Preparing the Firmware



- Select "PROGRAM DATA" in the bottom
- Click on "FILE > OPEN"
- Select "ir_led_driver_production.hex"
- Change the TAB to "DATA MEMORY"
- Click on "FILE > OPEN"
- Select "ir_led_driver_production.hex" again.
- Repeat for "OPTION BYTE"
- You should see the file in the "Status" tab on the left.

Step 7 — Flashing and verify



- Click "Program > All Tabs"
- If there's no Error, disconnect the P5 connector, restart the headset and check into "VideoCalibrationUtility.exe" (Normally in the "OSVR-Core/bin" Folder) that you can still see LED.
 - *i* Some LED will be missing, it's normal !
 - If you do see the LED, do a calibration.
 - If you don't see the LED, make a post on Reddit, we will try to help.

↗ <https://www.reddit.com/r/OSVR/>

To reassemble your device, follow these instructions in reverse order.